

In re Patent Application of:
WILSON ET AL
Serial No. 10/647,558
Filed: 08/25/2003

REMARKS

Specification

In the specification, the paragraphs [0023], [0026], and [0027] have been amended to include a new numeric label "3" after the term "package" to clearly indicate a corresponding element in the amended Figure 1. Words "not shown", as related to the package with reference to Figure 1, were removed from the description in paragraph [0023].

Figures

In amended Figure 1, a broken lined box, schematically representing the laser package, has been added and labeled with a numeral "3", so that the box includes within itself all the elements shown in FIG.1 except the temperature sensor 5.

Care has been taking to ensure that no new matter has been added by the addition of the box 3 to the drawing Figure 1. Support for this addition can be found in the paragraph [0023] of the original Specification as filed (emphasis in italics added):

"Referring now to Fig. 1, a circuit is shown for providing a diode laser output signal having substantially non-varying output power at a substantially non-varying output wavelength. All of the components described hereafter are contained within a hermetically sealed package (not shown), with the exception of a temperature sensor 5, which is disposed outside the package."

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Claims

Claims 1-11 are pending in this application.

Claims 1-11 have been rejected.

Claims 4 and 6 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite.

Claims 4 and 6 have been amended by removing the limitation "laser" from the wording "the laser package", to read "the ~~laser~~ package". The amended limitation "the package" has now the required antecedent basis, i.e. line 3 of claim 1 defines "a package for housing electronic and optical components".

Claims 1-11 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Broutin et al. (Patent No. US 6,697,388) in view of Broutin et al. (Patent No. US 6,243,403).

Regarding Claims 1-3 and 9-11, the applicant respectively disagrees with the Examiner's assessment that Broutin et al. ('388) shows in Fig.1 the following element of applicant's claim 1 (matter in brackets are references to '388 added by the Examiner):

" ... c) switching means (160, i.e. controller) for changing a bias on the photodetector between forward bias mode (176) and reverse bias mode (178), whereby the photodetector provides an indication of the output power of the light source output

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signal when the photodetector is in the reverse bias mode, and a signal that is related to the temperature of the light source when the photodetector is in the forward bias mode (col.4, lines 1-9)".

Broutin et al ('388) cited by the Examiner teaches that the D/A outputs 176 and 178 of the controller 160 are for controlling a TEC 124 and a laser gain current, respectively, and not for changing a bias on a photodetector, as claimed in the aforecited feature (c) of the current invention. Support for this understanding of the cited '388 Broutin et al. patent can be found in Figure 1 thereof, and in col. 4, lines 2-9 of '388

"The controller via D/A output 178 supplies a current supply control voltage to a laser current supply 154, which uses this voltage to supply a laser gain current to the module 110. As will be discussed below, the control system anticipates when a tuning current ramp is required to optimize the system performance, and therefore, a control signal ... is sent to the TEC 124, via D/A 176."

Although Broutin et al. ('388) teach two photodetectors, i.e. photodiodes 136 and 142, these photodetectors are used as elements of a Fabry-Perot etalon optical discriminator circuit 130, and, contrary to the present invention, are not switched between a positive bias mode and a negative bias mode. Consequently, the '388 patent does not teach or suggest any means for such switching, as defined in Claim 1 of the present invention.

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Indeed, in the DBR laser control system taught in the '388 patent, each of said photodetectors 136, 142 functions to convert an optical signal into an electrical signal. Support for this can be found in col.3, lines 31-33 and 47-49 of '388: "*The first discriminator signal 134a, is input to the first photodetector 136 to convert the signal 134a (which is an optical signal) into an electrical signal 138*" "*The output from the etalon filter 140 is input to the second photodetector 142 to convert the signal 134b (which is an optical signal) into an electrical signal 144*". This photodiode arrangement within a wavelength discriminator described in '388 is commonly known as a wavelength stabilization system, an example of which is taught by Brouin et al. in the second prior art patent '403 cited by the examiner.

However, it is well known in the art that converting an electrical signal into an optical signal, as taught in '388, requires a negative bias on the photodiode. Nowhere in the '388 or '403 specifications Brouin et al. teach "*changing a bias on the photodetector between forward bias mode and reverse bias mode*", as claimed in claim 1 of the present invention, using either the controller 160 or any other means.

Contrary to Brouin et al, claim 1 of the present invention defines a single photodetector having two functions: i) it "*provides an indication of the output power of the light source output signal when the photodetector is in the reverse bias mode*", which is similar to the photodiodes' 136, 142 function taught in '388, and ii) it "*provides ... a signal that is related to the temperature of the light source when the photodetector is in the forward bias mode*".

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This second function (ii) of the photodetector taught in claim 1 of the present invention is neither disclosed nor suggested anywhere in '388 or '403. Instead, Brouin et al. teaches using a different device for this temperature-measurement function, a thermistor 126: "A thermistor 126 is used to monitor the temperature of the module 110. The temperature of TEC 124 is varied based on a TEC control signal from a controller 160 through a digital to analog (D/A) controller output 176" (col.3, lines 3-5).

Summarizing, the present invention as claimed by the original claim1 defines a novel and inventive important feature - *switching means for changing a bias on the photodetector between forward bias mode and reverse bias mode, whereby the photodetector provides an indication of the output power of the light source output signal when the photodetector is in the reverse bias mode, and a signal that is related to the temperature of the light source when the photodetector is in the forward bias mode* - which is not disclosed or suggested in any of the prior art cited by the Examiner.

Consequently, the combination of the prior art patents cited by the examiner does not yield the claimed invention, which therefore could not be considered obvious to a person skilled in the art at the time the invention was made.

The Applicants therefore believe that the transmitter of the instant invention, as claimed by claim 1 and claims 2-9 dependent thereon is patentable over the prior art cited.

The applicants also believe, because of similar arguments, that independent claims 10 and 11 define features ("*switching means*

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... for changing a bias on the photodetector between a forward bias mode and a reverse bias mode, to provide an indication of the output power of the light source output signal when the photodetector is in the reversed biased mode and for providing a signal that is related to the temperature of the light source in the forward biased mode") which are not anticipated by Brouin et al ('388) or Brouin et al in '403, or other known prior art, and are therefore also patentable in view of the cited and other known prior art.

In view of the aforegiven arguments, the Applicant respectfully requests favorable reconsideration of this application.

Should any minor informalities need to be addressed, the Examiner is encouraged to contact the undersigned attorney at the telephone number listed below.

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees, to Deposit Account No. 50-1465 and please credit any excess fees to such deposit account.

Respectfully submitted,

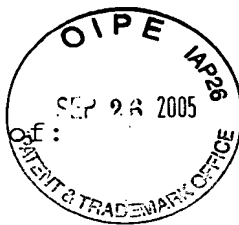


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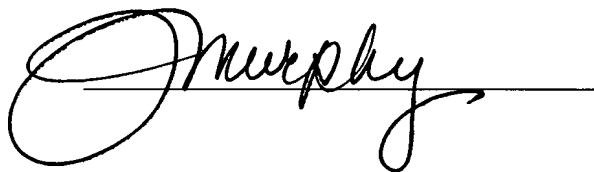
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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to: MAIL STOP AMENDMENT, COMMISSIONER OF PATENTS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450 on this 21 day of September, 2005.

A handwritten signature in cursive script, appearing to read "Murphy", written over a horizontal line.

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IN THE DRAWINGS

The attached drawing sheet includes changes to Fig. 1. This sheet replaces the original sheet including Fig. 1.

In Figure 1, the following changes have been made:

- a broken lined box has been added and labeled with reference numeral "3"; and
- descriptive labels have been inserted in the previously unlabeled blocks.

The amended drawing Figure 1 is believed to be in suitable form; if it is not, the Examiner is kindly requested to suggest what further drawing changes are required.

Attachment: Replacement Sheet